

## TITLE OF THE INVENTION

## HERMETIC COMPRESSOR

## 5 CROSS-REFERENCE TO RELATED APPLICATION

This application claims the benefit of Korean Patent Application No. 2003-85712, filed November 28, 2003 in the Korean Intellectual Property Office, the disclosure of which is incorporated herein by reference.

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## BACKGROUND OF THE INVENTION

## 1. Field of the Invention

The present invention relates, in general, to hermetic compressors and, more particularly, to a hermetic compressor, which is constructed so that a cap is fitted into a ground hole, thus preventing paint from flowing into the ground hole when a hermetic casing of the hermetic compressor is painted, and preventing a bracket having the ground hole from corroding when the hermetic compressor is stored in a place or transported to a desired place.

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## 2. Description of the Related Art

Generally, a hermetic compressor compresses a low-pressure gas to highly pressurize the low-pressure gas, prior to discharging the highly pressurized gas to an outside of a hermetic casing. The hermetic compressor includes the hermetic casing, a compressing unit, and a drive unit. The compressing unit is installed in the hermetic casing to compress the gas. The drive unit is installed in the hermetic casing to drive the

compressing unit.

The drive unit includes a stator around which a coil is wound, and a rotor. On an outer surface of the hermetic casing is mounted a contact terminal to supply electricity to the stator. The stator, the rotor, and the contact terminal are coupled to each other by a plurality of electric wires, thus forming an electric circuit.

Further, a plurality of brackets each having a ground hole to reliably ground the electric circuit having both the stator and rotor to the earth or a conductive body serving in place of the earth, are provided on the outer surface of the hermetic casing, thus preventing an electric current, leaked from the electric circuit due to a breakage of the electric wires or a short circuit, from flowing along the hermetic casing, therefore protecting a user from an electric shock or a fire.

In the hermetic compressor, the drive unit and the compressing unit are installed in the hermetic casing to be sealed in the hermetic casing. Thereafter, the outer surface of the hermetic casing is painted. At this time, the paint must not flow into or cover the ground hole to which a ground wire is electrically connected, so that the current leaked from the electric circuit due to a breakage of the electric wires or a short circuit, is safely guided to the earth or the conductive body serving in place of the earth.

In the conventional hermetic compressor, an adhesive tape is attached around the ground hole before executing a painting work, thus preventing the ground hole and a portion of the bracket around the ground hole from being covered with the paint. Therefore, the outer surface of the hermetic casing is painted except for both the ground hole and the portion of the bracket around the ground hole.

However, the conventional hermetic compressor has a problem in that the adhesive tape may be easily removed from the portion of the bracket around the ground hole without being firmly attached to the portion of the bracket around the ground hole

when the bracket having the ground hole is uneven or covered with impurities, thus causing the paint to flow into the ground hole.

In the conventional hermetic compressor, even when a worker attaches the adhesive tape to the bracket around the ground hole without careful attention, a gap may  
5 be formed between the ground hole and the adhesive tape, thus allowing the paint to flow into the ground hole. The conventional hermetic compressor has another problem in that it is complicated to attach the adhesive tape to the bracket around the ground hole.

The conventional hermetic compressor has a further problem in that a portion of  
10 the bracket around the ground hole is not painted because the adhesive tape wholly covers the ground hole, thus the bracket has a poor appearance and suffers rapid corrosion.

#### SUMMARY OF THE INVENTION

15 Accordingly, it is an aspect of the present invention to provide a hermetic compressor, which is constructed to easily cover a ground hole during a painting work, thus reliably preventing paint from flowing into the ground hole.

Additional aspects and/or advantages of the invention will be set forth in part in  
20 the description which follows and, in part, will be obvious from the description, or may be learned by practice of the invention.

The above and/or other aspects are achieved by a hermetic compressor, including a hermetic casing, at least one bracket mounted to a predetermined portion of an outer surface of the hermetic casing, and a ground hole provided on a predetermined  
25 portion of the bracket, with a cap being made of an elastic material and being fitted into

the ground hole to prevent paint from flowing into the ground hole during a painting work.

The cap may include a head having a larger diameter than the ground hole, and a body extending from the head. The body may have a similar diameter to the ground hole to be fitted into the ground hole through a press-fitting method.

5 A shoulder may be provided on a predetermined portion of the body of the cap to be spaced apart from the head of the cap by a thickness of the ground hole, and may have a larger diameter than the ground hole. Thus, when the cap is fitted into the ground hole, the head is in close contact with an outer surface of the bracket on which the ground hole is provided, and the shoulder is in close contact with an inner surface of the bracket on which the ground hole is provided, thus preventing the paint from flowing into the ground hole.

The shoulder may have a side surface which is inclined at a predetermined angle with the body of the cap to form an inclined surface, thus allowing an upper end of the shoulder to be smoothly removed from the ground hole.

15 The cap may be made of rubber or a silicone.

#### BRIEF DESCRIPTION OF THE DRAWINGS

20 These and other aspects and advantages of the invention will become apparent and more readily appreciated from the following description of the preferred embodiments, taken in conjunction with the accompanying drawings of which:

FIG. 1 is a perspective view of a hermetic compressor, according to an embodiment of the present invention;

25 FIG. 2 is a perspective view of a cap to prevent paint from flowing into a ground hole of the hermetic compressor of FIG. 1, with the cap being detached from the ground

hole; and

FIG. 3 is a sectional view of the cap of FIG. 2, with the cap being fitted into the ground hole.

## 5 DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENTS

Reference will now be made in detail to the present preferred embodiments of the present invention, examples of which are illustrated in the accompanying drawings, wherein like reference numerals refer to like elements throughout. The embodiment is described below in order to explain the present invention by referring to the figures.

FIG. 1 is a perspective view of a hermetic compressor, according to an embodiment of the present invention. As shown in FIG. 1, the hermetic compressor according to the present invention includes a hermetic casing 10, with upper and lower casings 11 and 12 being assembled with each other to form the hermetic casing 10. A compressing unit (not shown) and a drive unit (not shown) are installed in the hermetic casing 10.

The upper and lower casings 11 and 12 are assembled with each other, through, for example, a welding process, to seal the compressing unit and the drive unit in the hermetic casing 10. An inlet pipe (not shown) is provided on a predetermined position of the hermetic casing 10 to draw a low-pressure gas into the hermetic casing 10. The low-pressure gas in the hermetic casing 10 is compressed to be highly pressurized by the compressing unit. An outlet pipe (not shown) is provided on a predetermined position of the hermetic casing 10 to discharge the highly pressurized gas to an outside of the hermetic casing 10.

Further, a contact terminal 13 is provided on an outer surface of the lower casing

12 of the hermetic casing 10 to supply external electricity to the drive unit which drives the compressing unit. A relay bracket 14 is provided on the outer surface of the lower casing 12 around the contact terminal 13. Further, a mounting bracket 15 is provided on the outer surface of the lower casing 12 below the contact terminal 13, so that the hermetic casing 10 is installed at a desired position, for example, in a refrigerator or in an air conditioner, using the mounting bracket 15.

The relay bracket 14 and the mounting bracket 15 each have a ground hole 20 to prevent a current, leaked from an electric circuit of the hermetic compressor due to a breakage of electric wires or a short circuit, from flowing along the hermetic casing 10, thus preventing safety hazards.

After the compressing unit and the drive unit are installed in the hermetic casing 10, outer surfaces of the upper and lower casings 11 and 12 are painted. At this time, the ground holes 20 must not be covered with paint so that the current leaked from the electric circuit due to the breakage of the electric wires or the short circuit is safely led to the earth of a conductive body serving in place of the earth, without flowing along the hermetic casing 10.

The hermetic compressor according to the present invention includes a plurality of caps 30. Each of the caps 30 is easily fitted into an associated ground hole 20 to prevent the paint from flowing into the ground hole 20. The construction and operational effects of the caps 30 will be described in detail with reference to FIGS. 2 and 3.

FIG. 2 is a perspective view of a cap 30 to prevent the paint from flowing into the ground hole 20 formed on the relay bracket 14 included in the hermetic compressor of FIG. 1, with the cap 30 being detached from the ground hole 20. FIG. 3 is a sectional view of the cap 30 fitted into the ground hole 20.

As shown in FIG. 2, the cap 30 according to the present invention includes a

head 31, a body 32, and a shoulder 33, that are integrated with each other into a single structure. A lower end of the head 31 has a flat surface with a diameter larger than the ground hole 20, so that the head 31 is in close contact with an outer surface of the relay bracket 14 around the ground hole 20 when the cap 30 is fitted into the ground hole 20.

5 The body 32 extends from the lower end of the head 31 to a predetermined length. The body 32 has a diameter similar to the ground hole 20 to pass through the ground hole 20.

The shoulder 33 is integrally provided on a predetermined portion of the body 32.

10 In this case, an upper end of the shoulder 33 has a diameter slightly larger than the ground hole 20 to be in close contact with an inner surface of the relay bracket 14 around the ground hole 20 when the cap 30 is fitted into the ground hole 20.

A length L1 between the lower end of the head 31 and the upper end of the shoulder 33 is similar to a thickness L2 of the ground hole 20 which corresponds to a thickness of the relay bracket 14 having the ground hole 20. As shown in FIG. 3, when 15 the cap 30 is fitted into the ground hole 20, an insert part 32a of the body 32 provided between the head 31 and the shoulder 33 is placed in the ground hole 20. At this time, the lower end of the head 31 is in close contact with the outer surface of the relay bracket 14 around the ground hole 20, while the upper end of the shoulder 33 is in close contact with the inner surface of the relay bracket 14 around the ground hole 20.

20 A lower end of the shoulder 33 has an equal diameter to a diameter of the body 32. Further, a side surface of the shoulder 33, which extends from the upper end to the lower end of the shoulder 33, is inclined to form an inclined surface.

The cap 30 constructed as described above is made of an elastic material to be fitted into the ground hole 20 while being in close contact with the ground hole 20. 25 According to the embodiment of the present invention, the cap 30 is preferably made of

rubber or a silicone.

Thus, when it is required to paint the outer surfaces of the upper and lower casings 11 and 12, a user holds the head 31 of the cap 30 constructed as described above and fits the body 32 of the cap 30 into the ground hole 20. When the body 32 passes through the ground hole 20, the shoulder 33 is elastically compressed to a size to correspond to the ground hole 20, thus the body 32 passes through the ground hole 20.

After the shoulder 33 passes through the ground hole 20, the shoulder 33 elastically restores an original shape thereof, thus being in close contact with the inner surface of the relay bracket 14 around the ground hole 20. Therefore, when the cap 30 is fitted into the ground hole 20, the insert part 32a of the body 32 is placed in the ground hole 20, and the lower end of the head 31 and the upper end of the shoulder 33 are respectively in close contact with the outer surface and the inner surface of the relay bracket 14 around the ground hole 20, thus preventing the paint from flowing into the ground hole 20 during a painting work.

The present invention has been described herein, with reference to the cap 30 fitted into the ground hole 20 of the relay bracket 14, as shown in FIGS. 2 and 3. However, because another cap 30 having the same construction as the cap 30 of the relay bracket 14, is fitted into the ground hole 20 of the mounting bracket 15 (see, FIG. 1) in a same manner as the cap 30 of the relay bracket 14, the cap 30 fitted into the ground hole 20 of the mounting bracket 15 will not be described herein.

As is apparent from the above description, the present invention provides a hermetic compressor, which is constructed so that a cap is fitted into a ground hole of a bracket. The cap includes a body, a head and a shoulder, that are integrated with each other into a single structure. The body is made of an elastic material, and passes through the ground hole. The head and the shoulder of the cap are respectively in close



contact with portions of the bracket around the ground hole. When the cap constructed as described above is fitted into the ground hole of the bracket, the cap easily covers the ground hole during a painting work, thus preventing paint from flowing into the ground hole. Therefore, the hermetic compressor allows a current, leaked from an electric circuit

5 of the hermetic compressor due to a breakage of electric wires or a short circuit, to safely flow to the earth or a conductive body serving in place of the earth along a ground wire connected to the ground hole.

Although an embodiment of the present invention has been shown and described, it would be appreciated by those skilled in the art that changes may be made in these embodiments without departing from the principles and spirit of the invention, the scope of which is defined in the claims and their equivalents.